Remarks

I. Status of claims

Claims 1-16 and 20-25 were pending.

Claims 26-29 have been added.

II. Related Application Disclosure Statement

Applicant also calls the Examiner's attention to the following commonly owned related U.S. patent application/U.S. patent, which is listed on the form PTO 1449 that is submitted with the Information Disclosure Statement that is being filed with this Amendment:

- U.S. Application No. 09/728,297, which was filed on December 1, 2000, is entitled "SCALABLE, FRAUD RESISTANT GRAPHICAL PAYMENT INDICIA", and has issued as U.S. Patent No. 6,938,017.

III. Claim rejections – Double Patenting

The Examiner has rejected claims 1, 16, and 20 under the judicially created doctrine of obviousness-type double patenting over U.S. 6,751,352 in view of Epstein (U.S. 6,601,172). The Terminal Disclaimer being filed herewith should overcome this obviousness-type double patenting rejection.

IV. Claim rejections – 35 U.S.C. § 103(a)

A. Claims 1-5, 10-16, and 20

The Examiner has rejected claims 1-5, 10-16, and 20 under 35 U.S.C. § 103(a) over Epstein (U.S. 6,601,172) in view of Kato (JP 08-185451) and Iizuka (U.S. 5,153,928).

1. Independent claim 1

Independent claim 1 has been amended and now recites in part "converting a base image into a marked image containing a graphical encoding of the signed message."

Epstein

The Examiner has indicated that Epstein teaches the feature of claim 1 relating to generating a corroborative signed message but fails to teach or suggest anything about the other features of claim 1. To make-up for this failure of Epstein's disclosure, the Examiner has relied on the teachings of Kato and Iizuka.

Kato

Regarding Kato, the Examiner has made the following statements:

> (1) Kato teaches the handwritten characters can be added to the graphical encoding of the signed message to produce a marked image.
>
> (2) Furthermore, Kato teaches that the base image, i.e., handwritten characters, is modulated in order to store it properly.
>
> (3) Yet further, Kato also discloses encoding the segmented image area with a two-dimensional bar code to result in graphically encoding the corroborative signed message in the marked image, wherein east set of code patterns encodes a respective corresponding group of image areas, which is based on the pixel segmentation.

The Examiner has indicated that the image of a person's handwritten input described in Kato corresponds to the base image recited in claim 1. The Examiner, however, has not identified anything in Kato's disclosure that corresponds to the signed message. Kato teaches a method in which a two-dimensional bar code is generated from an image of a person's handwritten input. Kato's method does not involve graphical encoding of a signed message. Indeed, there is no signed message involved in the process by which Kato generates the two-dimensional bar code. Kato does not provide any details about how the handwritten input image is converted into a two-dimensional bar code. Nevertheless, Kato clearly does not even hint that the processes of converting the handwritten input image into a two-dimensional

bar code involves "converting a base image into a marked image containing a graphical encoding of a signed message," as now recited in claim 1.

The Examiner also has stated that:

> ... it would have been obvious to a person in the art at the time the invention was made to modify the method disclosed in Epstein to include modulating a base image with a graphical encoding of the signed message to produce a marked image and encoding the segmented image areas with sets of two-dimensional code patterns to graphically encode the corroborative signed message in the marked image, wherein each set of code patterns encodes a respective corresponding group of image areas.

The Examiner, however, has not explained how Epstein's revision authentication method would be modified to include Kato's handwritten input image processing and storage method. In particular, Epstein's revision authentication method does not have anything whatsoever to do with images of a person's handwritten input. Instead, Epstein's method involves generating digital signatures that are used to authenticate revisions to digital documents. Kato's method has nothing whatsoever to do with the authentication of digital documents. If the Examiner persists with this rejection, she is asked to provide a detailed explanation of how Epstein's revision authentication method would be modified to include Kato's handwritten input image processing and storage method.

The Examiner has concluded her discussion of Kato with the statement that her proposed modification of Epstein's revision authentication method based on Kato's teachings "would have been obvious because a person having ordinary skill in the art, at the time the invention was made, would have been motivated to do so since it is suggested by Kato in paragraphs 12, 14, and 18-20." This conclusion, however, is not supported by Kato's disclosure. In paragraph [0012], Kato merely describes the operation of the handwriting input pad 10. In paragraph [0014], Kato merely describes the operation of the image cutoff circuit 16. In paragraph [0018], Kato merely explains that the handwritten input image is compressed and the resulting compression data is converted into a two-dimensional bar code. In paragraph [0019], Kato merely describes how the two-dimension bar code is decoded to restore the handwritten input. In paragraph [0020], Kato merely explains that the compression step may be omitted if the two-dimensional bar code has sufficient capacity to encode the uncompressed handwritten input image data.

The Examiner is asked to point to specific locations in the cited references that provide the requisite motivation to combine the references as proposed by the Examiner and that provide the requisite factual basis from which one of ordinary skill in the art at the time the invention was made could have a reasonable basis for believing that such a combination would be successful (see MPEP § 706.02(j)). In this process, the Examiner is reminded that she is not permitted to engage in hindsight reconstruction of the claimed invention, using applicants' disclosure as a blueprint for piecing together prior art to defeat patentability. Without a proper explanation for combining the cited prior art, the Examiner has failed to establish a proper *prima facie* case of obviousness and the rejection of independent claim 1 should be withdrawn.

Iizuka

The pertinent language of claim 1 reads as follows:

> converting a base image into a marked image containing a graphical encoding of the signed message by
>
> dividing the base image into multiple image areas,
>
> segmenting at least some of the image areas into multiple groups based on pixel values in the image areas, and
>
> encoding the segmented image areas with sets of two-dimensional code patterns to graphically encode the corroborative signed message in the marked image, wherein each set of code patterns encodes a respective corresponding group of image areas.

Regarding Iizuka, the Examiner has stated that:

> Iizuka teaches dividing the base image into multiple image areas. Furthermore, Iizuka also teaches that searching occurs based on detecting image areas segments into multiple groups based on pixel values in the image areas.

These statements, however, do not have anything whatsoever to do with converting a base image into a marked image containing a graphical encoding of a signed message by the segmenting, dividing, and encoding steps recited in claim 1. Instead, these statements relate to Iizuka's method of reading a particular type of two-dimensional bar codes in which data bits are expressed by a black-and-white pattern of meshes. In accordance with this bar code

data reading method, the image data that is read by the bar code reader is divided into partial image data segments and each segment is searched for a feature pixel group. The position of the main scanning reference pattern is determined from the locations of the feature pixel groups in the partial segments. The black-and-white meshes in the two-dimensional bar codes are recognized from the positional data.

The Examiner has concluded that "it would have been obvious to a person in the art at the time the invention was made to modify the method disclosed in Epstein to include a marked image by first dividing the base image into multiple image areas and also segment some of the image areas based on the pixel value in the image areas." The Examiner, however, has not provided any basis for this conclusion. Moreover, Epstein's revision authentication method does not involve reading two-dimensional bar code data. Therefore, there would not have been any reason for one of ordinary skill in the art at the time the invention was made to modify Epstein's revision authentication method to include selected steps of Iizuka's method of reading two-dimensional bar codes.

The Examiner has concluded her discussion of Iizuka with the statement that her proposed modification of Epstein's revision authentication method based on Iizuka's teachings "would have been obvious because a person having ordinary skill in the art, at the time the invention was made, would have been motivated to do so since it is suggested by Iizuka in col. 2, lines 50-55 and col. 2, line 55 - col. 3, line 26.." This conclusion, however, is not supported by Iizuka's disclosure. In particular, the cited section of Iizuka's disclosure merely describes a method of reading two-dimensional bar codes.

The Examiner is asked to point to specific locations in the cited references that provide the requisite motivation to combine the references as proposed by the Examiner and that provide the requisite factual basis from which one of ordinary skill in the art at the time the invention was made could have a reasonable basis for believing that such a combination would be successful (see MPEP § 706.02(j)). In this process, the Examiner is reminded that she is not permitted to engage in hindsight reconstruction of the claimed invention, using applicants' disclosure as a blueprint for piecing together prior art to defeat patentability. Without a proper explanation for combining the cited prior art, the Examiner has failed to establish a proper *prima facie* case of obviousness and the rejection of independent claim 1 should be withdrawn.

Conclusion

As explained above, none of the cited references teaches or suggests converting a base image into a marked image containing a graphical encoding of a signed message in accordance with the dividing, segmenting, and encoding steps recited in claim 1. Therefore, no combination of the cited references possibly could render the invention recited in claim 1 obvious.

In addition, the Examiner appears to have impermissibly used applicants' disclosure as a blueprint for piecing together elements from incompatible sources in a manner that reconstructs the invention recited in claim 1 only with the benefit of hindsight. Without a proper explanation for combining the cited prior art to arrive at the invention recited in claim 1, the Examiner has failed to establish a proper *prima facie* case of obviousness and the rejection of claim 1 should be withdrawn.

For the reasons explained above, the Examiner's rejection of independent claim 1 under 35 U.S.C. § 103(a) over Epstein in view of Kato and Iizuka now should be withdrawn.

2. Claims 2-5 and 10-15

Each of claims 2-5 and 10-15 incorporates the features of independent claim 1 and therefore is patentable over Epstein, Kato, and Iizuka for at least the same reasons explained above.

3. Independent claim 16

Claim 16 essentially tracks the features of independent claim 1 discussed above and therefore is patentable over Epstein, Kato, and Iizuka for at least the same reasons explained above in connection with claim 1.

4. Independent claim 20

Claim 20 essentially tracks the features of independent claim 1 discussed above and therefore is patentable over Epstein, Kato, and Iizuka for at least the same reasons explained above in connection with claim 1.

B. Claim 6

The Examiner has rejected claim 6 under 35 U.S.C. § 103(a) over Epstein in view of Kato, Iizuka, and Hayosh (U.S. 6,611,598).

Claim 6 incorporates the features of independent claim 1. Hayosh does not make-up for the failure of Epstein, Kato, and Iizuka to teach or suggest the features of independent claim 1 discussed above. Indeed, the Examiner merely has cited Hayosh for the disclosure of "a digital certificate in the two-dimensional bar code produced by the public key digital signature system." Therefore, claim 6 is patentable over Epstein, Kato, Iizuka, and Hayosh for at least the same reasons explained above in connection with claim 1.

C. Claims 7-9 and 21

Claim 7 is an independent claim. Claims 8, 9, and 21 depend from claim 7.

The Examiner has rejected claims 7-9 and 21 under 35 U.S.C. § 103(a) over Epstein in view of Sabourin (Off-line Signature Verification by Local Granulometric Sized Distributions) and Wang (U.S. 5,490,217).

Claim 7 has been amended and now recites:

> 7. A machine-implemented bar coding method, comprising:
>
> generating a corroborative signed message from information to be encoded; and
>
> converting a base image that includes an image of a handwritten signature into a marked image having an appearance that resembles the base image and contains a graphical encoding of the signed message.

Epstein

The Examiner has indicated that Epstein teaches the feature of claim 7 relating to generating a corroborative signed message but fails to teach or suggest anything about the other features of claim 1. To make-up for this failure of Epstein's disclosure, the Examiner has relied on the teachings of Sabourin and Wang.

Sabourin

Regarding Sabourin, the Examiner has stated that "Sabourin et al. teach modulating a base image where the base image includes an image of a handwritten signature." Contrary to the Examiner's statement, however, Sabourin does not teach or suggest anything about modulating a base image. Instead, Sabourin teaches a method of generating a feature vector of local shape descriptor values that represent a handwritten signature. In accordance with this method, granulometric size distributions are used to define the local shape descriptors. An image of a signature is centered on a grid of rectangular retinas (see FIG. 3). Morphological operations based on a structuring element (SE) are performed on a set of the pixels in a signal exciting a retina. The pecstrum is computed by measuring the results of successive morphological openings of the image as the size of SE increases, wherein the sequence of openings are granulometries. The moments of the granulometries are evaluated for each retina and these moments are used as the local shape descriptors.

In Sabourin's method, the images of the handwritten signatures are not modulated, much less converted into a marked image as recited in claim 7. Indeed, the purpose of Sabourin's method is to generate a feature vector of local shape descriptor values that represent the consistent patterns in a person's signature in order to detect forgeries. Modulating a signature image would defeat the object of Sabourin's method to determine a representation of a person's signature because it would introduce artifacts that would not correspond to the person's actual signature.

Moreover, Sabourin does not teach or suggest anything that would have led one of ordinary skill in the art at the time the invention was made to convert a base image that includes an image of a handwritten signature into a marked image having a visual appearance that resembles the base image and contains a graphical encoding of a signed message, as now recited in claim 7.

The Examiner has asserted that Sabourin's disclosure contains a suggestion that would have led one of ordinary skill in the art at the time the invention was made to modify Epstein's revision authentication method to include modulating a base image, wherein the base image includes an image of a handwritten signature. The Examiner's assertion, however, is not supported by any of the numerous sections of Sabourin's disclosure that are cited by the Examiner. Indeed, none of the cited sections of Sabourin's disclosure teaches or suggests anything about modulating a base image with a graphical encoding of a signed

message to produce a marked image. As explained above, Sabourin's method merely involves analyzing images of handwritten signatures in order to determine a set of local shape descriptor values that can be used for detecting forgeries.

Wang

Wang describes a method in which each document is assigned a respective two-dimensional bar code that may contain content and identifying information about the document, information about the document format, processing instructions, information concerning textural and/or pictorial content of the document, and biometric information. With reference to FIG. 8, Wang teaches that the personal information 24, photograph image 26 and signature 28 on a passport 30 can be encoded into a machine readable image code 16, which may be affixed to the passport 30 (see col. 5, lines 58-63).

Wang, however, does not teach "converting a base image that includes an image of a handwritten signature into a marked image having a visual appearance that resembles the base image and contains a graphical encoding of the signed message," as now recited in claim 7. Indeed, the machine readable code 16 shown in FIG. 8 does not resemble the original passport image.

The Examiner has stated that "Wang et al. teach a handwritten signature encoded in an image code." From this statement, the Examiner has concluded that "Therefore, it would have been obvious to a person in the art at the time the invention was made to modify the method disclosed in Epstein to include modulating a base image, wherein the base image includes an image of a handwritten signature." The Examiner, however, has not explained how Epstein's revision authentication method would be modified to include Wang's teachings. In particular, Epstein's revision authentication method does not have anything whatsoever to do with machine readable image codes of the type described in Wang. Instead, Epstein's method involves generating digital signatures that are used to authenticate revisions to digital documents. If the Examiner persists with this rejection, she is asked to provide a detailed explanation of how Epstein's revision authentication method would be modified to include Wang's teachings.

The Examiner has concluded her discussion of Wang with the statement that her proposed modification of Epstein's revision authentication method based on Wang's teachings "would have been obvious because a person having ordinary skill in the art, at the

time the invention was made, would have been motivated to do so since it is suggested by Wang et al., col. 5, lines 36-67." This conclusion, however, is not supported by Wang's disclosure. In particular, the cited section of Wang's disclosure describes alternative application environments for the machine readable image code 16. However, this disclosure has nothing whatsoever to do with the revision authentication environment described in Epstein.

Conclusion

As explained above, none of the cited references teaches or suggests converting a base image that includes an image of a handwritten signature into a marked image having an appearance that resembles the base image and contains a graphical encoding of the signed message, as recited in claim 7. Therefore, no combination of the cited references possibly could render the invention recited in claim 7 obvious.

In addition, the Examiner appears to have impermissibly used applicants' disclosure as a blueprint for piecing together elements from incompatible sources in a manner that reconstructs the invention recited in claim 7 only with the benefit of hindsight. Without a proper explanation for combining the cited prior art to arrive at the invention recited in claim 7, the Examiner has failed to establish a proper *prima facie* case of obviousness and the rejection of claim 7 should be withdrawn.

For the reasons explained above, the Examiner's rejection of independent claim 7 under 35 U.S.C. § 103(a) over Epstein in view of Sabourin and Wang now should be withdrawn.

Claims 8, 9, and 21 incorporate the features of independent claim 7 and therefore are patentable over Epstein, Sabourin, and Wang for at least the same reasons.

D. Claims 22-25

The Examiner has rejected claims 22-25 under 35 U.S.C. § 103(a) over Epstein in view of Kato, Iizuka, and Wang.

Claims 22 and 23 incorporate the features of independent claim 16 and claims 24 and 25 incorporate the features of independent claim 20.

Wang does not make-up for the failure of Epstein, Kato, and Iizuka to teach or suggest the pertinent features of claims 16 and 20 discussed above in connection with claim 1. Indeed, Wang does not teach or suggest converting a base image into a marked image containing a graphical encoding of the signed message in accordance with the features of claims 16 and 20. To the contrary, Wang teaches that the process used to encode the machine readable code is described in U.S. 5,113,445. In this approach, the machine readable image code consists of a pattern of vertical bars of predetermined length that are spaced at various vertical and horizontal intervals, and the data stored the image code is encoded in the size, frequency and location of the vertical bars (see col. 4, lines 30-39 of Wang). That is, Wang's machine readable image code is not produced by converting a base image into a marked image containing a graphical encoding of the signed message in accordance with the dividing, segmenting, and encoding steps recited in claims 16 and 20. Rather, in accordance with the symbology used in Wang's approach, data is encoded in sequences of bars and spaces arranged in a two-dimensional array (see, e.g., FIGS. 5 and 6).

Therefore, claims 22-25 are patentable over Epstein, Kato, Iizuka, and Wang for at least the same reasons explained above.

V. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

Date: September 15, 2005

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